

HDMI® 4x4 MATRIX

over Cat5e/Cat6 with POE Receivers



**Vanco Part Number
EVMX44QI**

**HDMI® 4 x 4 Matrix
Selector Switch over
Cat5e/Cat6 with POE
Receivers**

EVOLUTION
BY 
ADVANCING DIGITAL CONNECTIVITY

www.vanco1.com • 800.626.6445

DEAR CUSTOMER

Thank you for purchasing this product.
For optimum performance and safety, please
read these instructions carefully before connecting, operating or
adjusting this product. Please keep this manual for future reference.

This product is 100% inspected and tested in the United States to verify HDMI performance parameters.

WARNING

1. Do not expose this unit to water, moisture, or excessive humidity.
2. Do not install or place this unit in a built-in cabinet, or other confined space without adequate ventilation.
3. To prevent risk of electrical shock or fire hazard, due to overheating do not obstruct unit's ventilation openings.
4. Do not install near any source of heat, including other units that may produce heat.
5. Do not place unit near flames.
6. Only clean unit with a dry cloth.
7. Unplug unit during lightening storms or when not used for an extended period of time. A surge protector is strongly recommended.
8. Protect the power cord from being walked on or pinched, particularly at the plugs.
9. Use unit only with accessories specified by the manufacturer.
10. Refer all servicing to qualified personnel.

CAUTION

HDMI is a very complex technology requiring continuous authentication of the signal and the same video resolution and audio settings on all electronic equipment in the system. When there are multiple sources and displays, the video resolution and audio setting on all connected units must be adjusted to correspond with that of the display having the lowest video and audio capability.

INTRODUCTION

The EVMX44QI is a professional HD 4x4 video matrix which can accept 4 HD HDMI signal inputs (Blu-ray, STB, etc.), and route them through 4-mirrored outputs either via HDMI or through a single Cat5e/6 using the provided receiver(s). The system supports POE so that the receiver(s) do not require a power supply since it is provided over the category cable by the matrix. This 4x4 matrix can support a maximum resolution of 1080p 3D or 1080p 60fs resolution up to 50m. The unit automatically adjusts for EDID and EQ to allow for an easy plug and play solution and is controllable manually through the front panel, IR, IP, or RS232.

HDMI® 4 x 4 Matrix Selector Switch over Cat5e/Cat6 with POE Receivers

Part # EVMX44QI

- Allows up to 4 HDMI sources to be distributed simultaneously to up to 4 displays
- 4 additional HDMI outputs for flexibility or mirroring capability; allows for connection of up to 8 displays or the ability to create a larger distribution system by cascading or daisy chaining
- Cat5e/Cat6 extender outputs support POE, No power supply is needed on the receiver end
- Transmission Range: Extends 1080p @ 60 Hz up to 164ft/50m over Cat5e/Cat6
- Automatically adjusts for EDID and EQ to allow for an easy plug and play solution and is controllable manually through the front panel, IR, IP, or RS232.
- Quick Install kit provides the perfect solution for Home or Retail AV as well as Commercial and Hospitality installations with all necessary receivers and IR accessories included
- HDMI and HDCP Compliant
- Supports audio formats PCM, Dolby®-AC3, DTS®7.1, DSD
- 4x4 bi-directional IR matrix embedded with local and remote IR control
- Auto restores last power-off matrix
- Advanced protection against ESD, EMI, and RFI
- Dimensions: 13.3" W x 1.8" H x 5.9" D

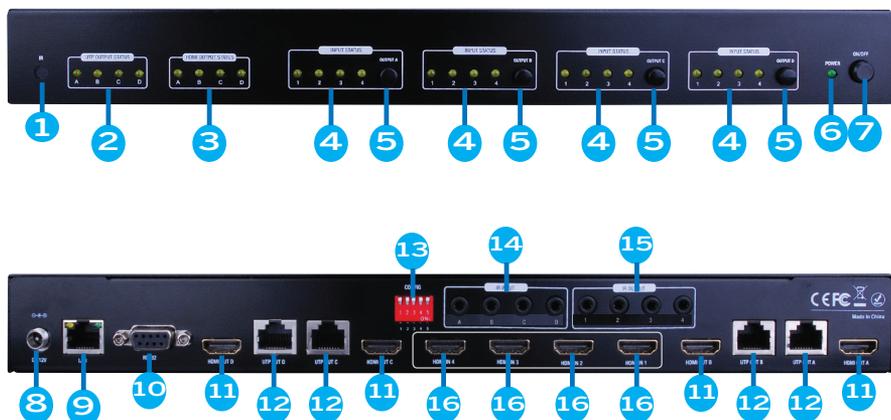
SPECIFICATIONS

Interface	4 HDMI input ports(female type A); 4 HDMI outputs (female type A);4 CAT5e/6 extender outputs (RJ45); 4 IR outputs (3.5mm);4 IR inputs (3.5mm);RS232 series port(DB9); LAN port (RJ45); 12V DC in (Ø3)
Power consumption.....	<24W when the function of power over UTP of 4 extender outputs are on.
Net weight	2.28kg per unit
Input/Output Video formats.....	1080p/1080i/720p/576p/576i/480p/480i
HD interface standard	HDCP 1.3
Input Video SignalAmplitude	0.5-1.0 volts p-p
Input DDC Signal.....	5 volts p-p (TTL)
HDMI Input/output audio formats.....	PCM, Dolby®-AC3, DTS®7.1, DSD, Maximum 8 channels
HDMI input/output cable distance	≥15m (26 AWG, and can be extended with amplifier in most cases)
Extender output resolution and distance	1080P 170ft (50meters)-CAT5e/ 230ft (70meters)-CAT6 720P/1080i 230ft (70meters)-CAT5e/ 300ft (90meters)-CAT6
Indicators	Power-Green, Extender output connected status-Yellow, Matrix Status-Yellow
IR frequency	Wide frequency 20-60kHz
ESD level	HBM ±4 kV(contact discharge)
Temperature range	0~40°C (operation), -20~60°C(stock)
Compliance	FCC CE

PACKAGE CONTENTS

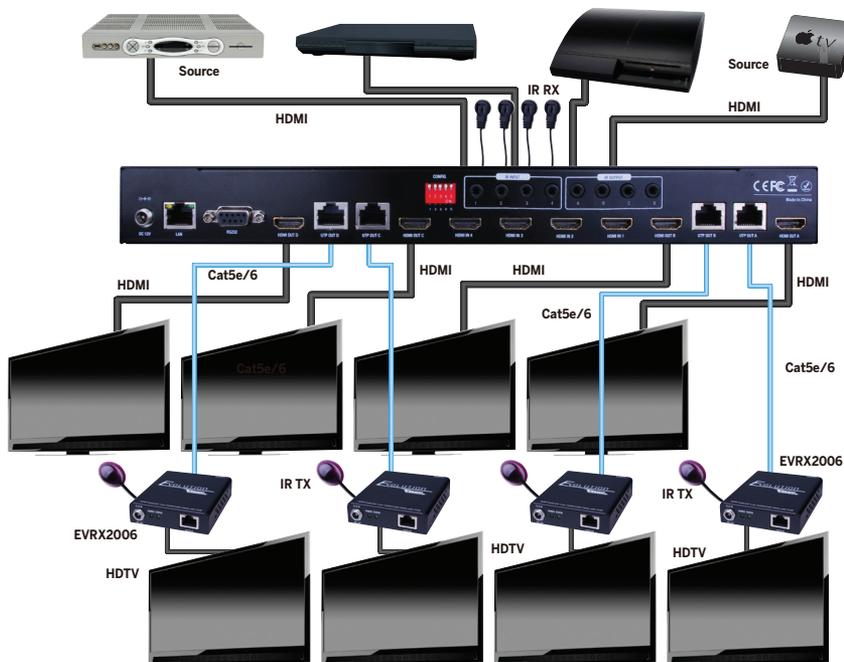
- 4x4 Matrix EVMX44QI
- (4) EVRX2006 Receivers
- (4) Wideband IR Tx cables
- (4) Wideband IR Rx cables
- IR Remote
- 12V/3A DC power supply
- Product Manual

PANEL DESCRIPTIONS



1. Local IR receiver window
2. UTP extender receiver link status
3. HDMI output link status
4. Selected source indicators for HDMI output A, B, C and D
5. Output selection buttons for HDMI output A, B, C and D
6. Power status indicator
7. Power switch
8. 12V DC input
9. Local 100M LAN Ethernet port
10. Local RS232 series port
11. 4 HDMI output ports
12. 4 UTP video output ports
13. CONFIG DIP switch
14. 4 IR extension receiver inputs
15. 4 IR extension transmitter outputs
16. 4 HDMI input ports

CONNECTION DIAGRAM



CONNECT AND OPERATE

Before installation

- Prepare place for installing system
 - The matrix should be far away from electromagnetic disturbance sources such as AC motors, electro-soldering, fluorescents, microwave ovens, etc.
 - These disturbance sources might affect video quality
 - Ensure the length of cable is suitable, no external tensions
 - Ensure reliable AC plug base
1. Connect HDMI sources (e.g. STB or Bluray) to the HDMI inputs of the Matrix Switcher with HDMI cables.
 2. Connect the provided receivers (e.g. HDMI Twisted Pair PoC Receiver) to the RJ-45 Output ports with twisted pair.
 3. Connect HDMI displays (e.g. HDTV) to HDMI outputs of the Matrix Switcher or the receivers with HDMI cables
 4. OPTIONAL: Connect the RS232 port of control device to the RS232 port of the matrix for control
 5. OPTIONAL: Connect the provided IR Receiver and Transmitters to their corresponding ports to send and receive IR. (SEE 4x4 IR MATRIX SECTION)
 6. OPTIONAL: Connect a well terminated (568B) Cat5e/6 cable to the LAN port for IP control of the matrix.
 7. Connect the provided power supply and test.

OPERATION AND CONTROL

The product has 4 HDMI inputs, and 4 HDMI/UTP outputs that are fully HDMI and HDCP compliant. 4 HDMI/UTP outputs can select any one of 4 HDMI different inputs, or same HDMI inputs. The user can control 4x4 matrix by front panel buttons, IR remote, RS232 or local 100M LAN Ethernet port. In clear view to receive an infrared signal from the remote handset used to control the display outputs.

Front Panel Control

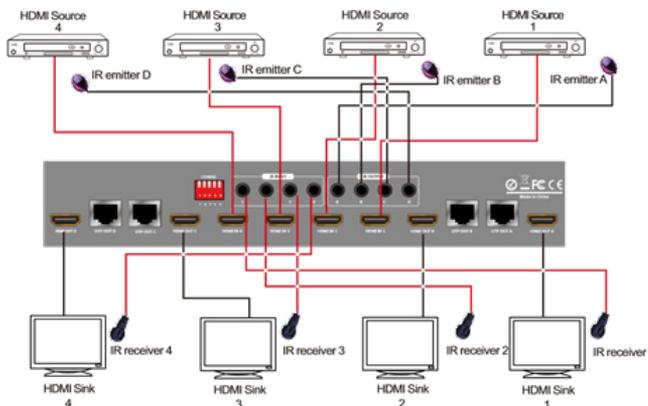
"OUTPUT A-D" buttons can select one of 4 HDMI inputs to HDMI/UTP outputs A to D.

Local IR Remote Control

Local IR remote control window can control the HDMI routing of the matrix. There are 4 groups for 4 output ports. For each output port, there are 4 number keys and two arrow keys. Press number keys to select specific input port, and left arrow button can select the previous input and right arrow can select the next input. Except of front panel local IR receiver window, the user can also use this local IR remote controller at remote UTP extender side with 4 IR receiver extension cables. In addition, the remote controller can control the matrix through any one IR receiver in matrix's IR IN ports.

4x4 IR matrix to control HDMI source devices

"Local IR matrix" is the IR transmission path between the local IR IN and OUT which is located in matrix's IR IN/OUT socket.



"Remote IR matrix" means the IR transmission path is between Remote UTP receiver unit and Local IR which is located in matrix's IR IN/OUT ports. This function is enabled or disabled via the setting of pin 4 in CONFIG switch. The matrix can not only switch the HDMI source signal to HDMI display terminals which are in remote rooms, but also can pass the IR signal through the 4x4 IR matrix. IR matrix shares the same control and transmission route as the HDMI matrix and is bi-directional.

IR matrix features and settings are accessed using the provided software. It can be customized according to customer real requirements, to default remote to local bidirectional IR matrix mode, local single direction IR matrix mode, or remote to local hybrid single direction IR matrix mode.

The bi-directional IR system allows you to control the source that is connected to the extender unit, from the display; or the display from the source, not simultaneously. There are two important things to note when setting up the IR system:

1. The IR Receiver (IR RX) is always what you point your remote at to send an IR signal. This pigtail is placed at the display for controlling the source; or at the source for controlling the display.
2. The IR Blaster (IR TX) is what sends the IR signal to what you are intending to control, whether it's the source or the display. This pigtail is placed at the source; either pointed at the source, or placed on the front panel of the source, see below for placement tips. Or placed at the display to control the display from the source.

IR RECEIVER



IR BLASTER



IR BLASTER (TX)

To control the source: Plug IR Blaster into IR TX port of transmitter unit (EVEX2006-TX); place transmitter in front of the IR eye of the source.

To control the display: Plug IR Blaster into IR TX port of receiver unit (EVEX2006-RX); place transmitter in front of the IR eye of the display.

Note: Placement of the IR Blaster is important and can result in the IR system not working if improperly placed.

First, locate the IR eye or window on the source

If placing the IR blaster right on the front panel of the source, do not stick right on top of the IR eye or IR window. The IR signal cannot travel through the double-sided tape on the Blaster. Instead place the blaster on either side, or on the top or bottom of the IR eye or window, with the tip of the blaster facing the IR eye or window. See below for illustration of where IR signal shoots from on IR Blaster:



CONFIG Switch

Please see below table to set the matrix with different configuration mode by front panel CONFIG switch.

Switch #	ON	OFF
1	Choose the higher definition display terminal's EDID forward to source	Choose the lower definition display terminal's EDID forward to source
2	Power over UTP function is ON	Power over UTP function is OF
3	EDID dynamic selection will be done only with two sinks connected to same source	EDID dynamic selection will be done only
4	Local IR matrix is ON; Remote IR matrix is OFF	Local IR matrix is OFF; Remote IR matrix is ON
5	Reserved	Reserved

EDID dynamic selection function

The 4x4 matrix has internal EDID management to support HDMI display terminal. EDID dynamic selection when 2 or more HDMI display terminals choose the same HDMI source. There are two different EDID dynamic selection modes, one is to choose the lower definition EDID as current EDID, and the other is to choose the higher definition EDID as current EDID. The user can set "CONFIG" switch 1 to select EDID mode, when "CONFIG" switch 1 is set as "o" (default mode), the matrix will choose the lower definition HDMI display terminal EDID, when "CONFIG" switch 1 is set as "on", the matrix will choose the higher definition HDMI display EDID. For example, One TV is 1080P, the other is 1080i. The "CONFIG" switch 1 is set as "OFF", the selected EDID will be 1080i, When 2 HDMI display terminal choose different HDMI sources, the matrix just forward connected HDMI display terminal EDID to selected source, and don't change anything. This function is to keep maximum compatibility and flexibility.

EDID call back function

All UTP extender output ports support the EDID call back function. UTP extender receivers will read EDID from display(s) then pass this EDID information to the matrix through the Cat5e/6 cable. The matrix will collect all connected displays EDID information and then do EDID dynamic selection. This function is automatic, no need to setup by customers. The intension function is to keep maximum compatibility

Rs232 control port

The 4x4 matrix provide a RS232 series port for system configuration, firmware update, matrix control, please refer to assorted GUI help to know how to control the matrix.

Power over UTP cable

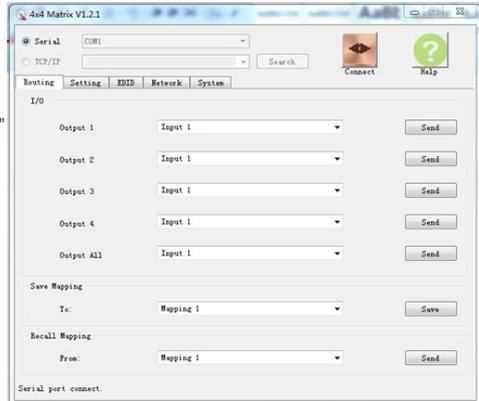
The 4x4 matrix has 4 UTP output ports that support power over the Cat5e/6 (POE) cable. This allows the receivers to get the power from the UTP output ports without DC adapters. Please note that UTP receivers must also support power over UTP (EVRX2006) and get the matched UTP extender receiver model for this function. This power over UTP function should be turned on when set "CONFIG" switch 2 to ON.

LAN port

The 4x4 matrix is also provided with a LAN port for TCP/IP control through a PC, control system, or mobile device. The matrix utilizes an internal web server so that the PC or mobile phone can visit the matrix internal web page for control using a web browser. The web server allows access to matrix switching, EDID settings/reading, DIP switch configuration etc.

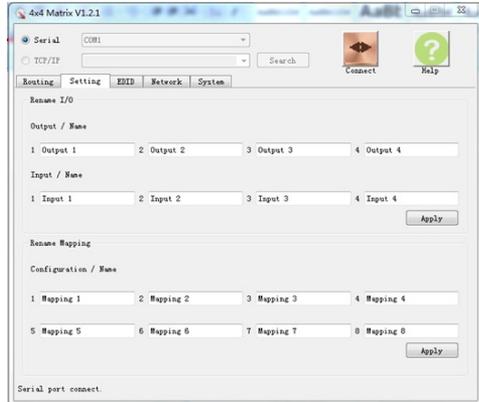
Input Selection and Mapping

1. I/O: Select the input: Click "Send" to change the I/O setting
2. Save Mapping: Select Mapping(1-8)
3. Preset mapping: Select Mapping(1-8), Click "Send" button to recall previous mapping which are saved



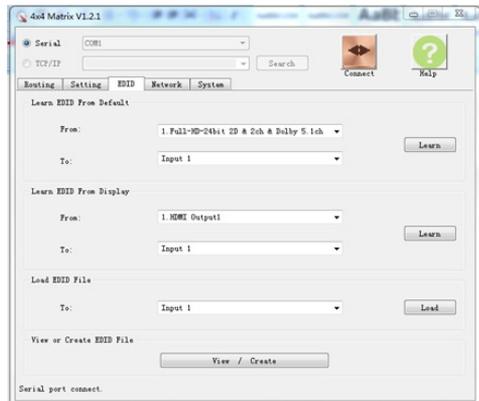
Rename I/O Button

1. Rename I/O: Rename output/input
2. Rename Mapping: Rename Mapping name



EDID BUTTON

1. Learn EDID from Default: Select Default EDID(1-9 Default EDID) Select Input, Click "Learn" button to learn default EDID
2. Learn EDID From Display: Select output, Select input, Click "Learn" button to learn display EDID
3. Load EDID File To Input Select Input: Click "Load" button to load EDID file



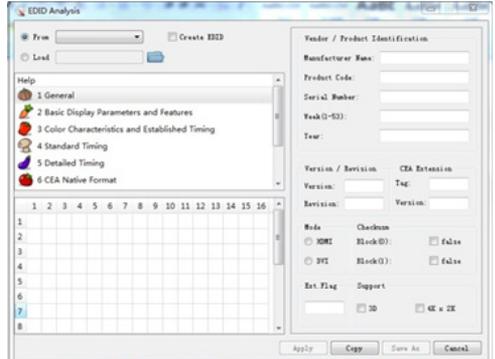
View EDID

1. Click "View / Create" button, display "EDID Analysis" popup menu
2. Select Input or HDMI output, then read EDID and analysis

You can also load EDID file for analysis

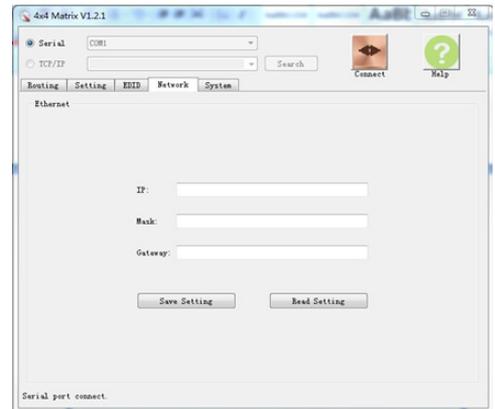
Create EDID:

- a) Click "View / Create" button, display "EDID Analysis" popup menu
- b) Click "Create EDID", you can choose EDID content as you want,
- c) Click "Apply" button, The content of 256 bytes will update as your chose parameters
- d) Click "Copy" button, The 256 bytes EDID will copy to Clipboard, you can paste the 256 bytes in notepad
- e) Click "Save As" button, you can save the 256 bytes to an EDID file in your folder



NETWORK

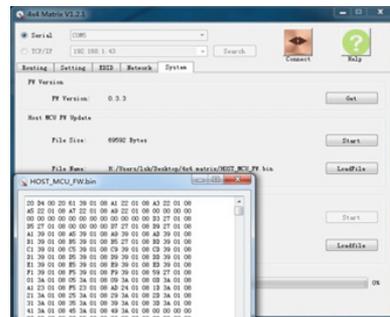
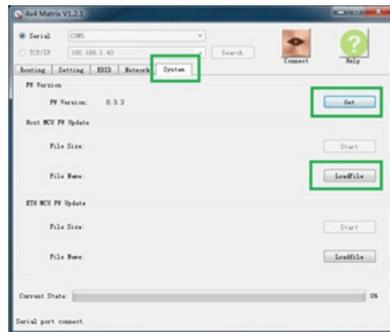
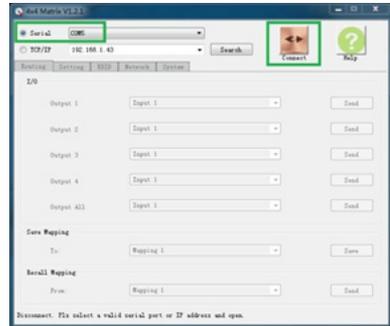
1. Save Setting: Save the IP address which is manually entered
2. Read Setting: Read the IP address from the device



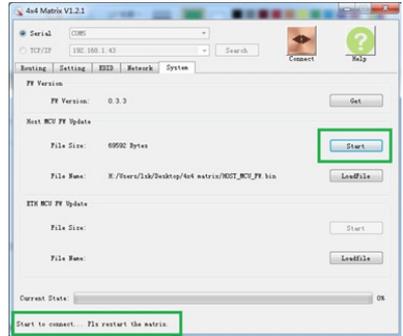
GUI USER GUIDE

You can update firmware as below

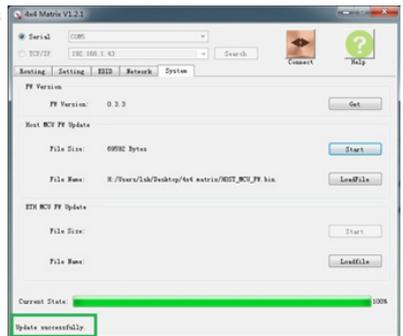
1. Choose the corresponding serial port, then click "open" button to open serial port:
2. Click "System" label, enter Firmware update interface, Click "LoadFile" button in "Host MCU FW Update" Combo box
3. Find the file path at popup dialog menu, Choose the bin file, "HOST_MCU_FW.bin", Click "Open" Button
4. Then popup a new dialog, Display corresponding hexadecimal content of bin file, You can close this window



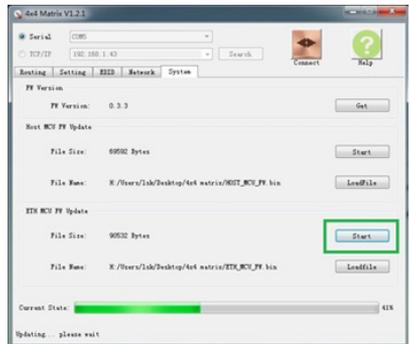
- Click “start” button in “Host MCU FW Update” Combo box, The status bar at GUI left bottom corner will show information “Start to connect ... Pls restart the machine.”, what you do is to power down matrix, then power on, wait for the firmware automatic update



- When matrix is powered on, Update is working. Progress bar will show the update progress. Status bar will show “Update successfully” once update is completed



- Similarly, you can update the firmware “ETH_MCU_FW.bin” in “ETH MCU FW update” Combo box as above step1~6



COM PORT SELECTION

- Click Serial COM1 Button to select COM port: Click Connect button to connect to the responding serial port
- CONNECT/DISCONNECT: Click Connect button to change connection status, it will toggle between connect and disconnect status
- Ethernet: Select TCP/IP button to switch to Ethernet function, it will auto search IP address and then display. The “Routing,Setting,EDID,Network,System” menu will be available for user, user can control matrix via ethernet. Click search button to search IP address again.

TROUBLE-SHOOTING

1. Best results are usually achieved when the source and display resolutions are the same. If resolutions differ, the extenders will try to adjust the signal to match the resolution of the HDTV with the lowest resolution. This will result in a picture with a lower resolution on the other HDTV sets.
2. If you do not get audio and video, access the "setup" menu on the TV to adjust the audio and video settings. If the HDMI control circuit cannot establish a handshake, then there usually will be no audio or video in addition to a blue or black screen with a statement similar to "this protocol not supported" or "weak signal".
3. If the above mentioned messages display, reset the receiver by disconnecting the power supply. You can also disconnect all of the HDMI and power cables, wait 15 minutes for any voltages to decay and then reconnect all of the cables.
4. If you are still encountering issues, attempt the "hot-plug concept. With all of the HDMI cables disconnected, turn on the source and plug in the HDMI cable into it's output, then power up the Vanco unit and plug the HDMI cable into it's input, finally turn on the display and plug the HDMI cable from the receiver into it. This activates all of the devices in corresponding order and results in a signal being plugged into a device that is on and will attempt to connect the signal.
5. Most of the major source and display manufacturers employ a proprietary control channel to communicate between devices from the same manufacturer. Sometimes this can interfere with the HDMI control circuit or the authentication of the signal. Call the manufacturer if you experience this issue. Sometimes a player, an audio/video receiver, or a cable/satellite box may not have the latest software update, usually this can be downloaded from the manufacturer's website.
6. If you have problems with the IR control circuit, make sure that the IR RX pigtail is plugged into extender receiver and pointed at the display, and the IR TX pigtail is attached to the extender sender and pointed at the source.

SAFETY AND NOTICE

The EVMX44QI has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipments, the EVMX44QI should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit.
- Do not attempt to service this unit yourself, except where explained in this manual.
- Provide proper ventilation and air circulation and do not use near water.
- Keep objects that might damage the device and assure that the placement of this unit is on a stable surface.
- Use only the power adapter and power cords and connection cables designed for this unit.
- Do not use liquid or aerosol cleaners to clean this unit.
- Always unplug the power to the device before cleaning.

LIMITED WARRANTY

With the exceptions noted in the next paragraph, Vanco warrants to the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this product, in Vanco's opinion, prove defective within this warranty period, Vanco, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of Vanco. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

Items integrated into Vanco products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to Vanco. A surge protector, power conditioner unit, or an uninterruptible power supply must be installed in the electrical circuit to protect against power surges.

If repairs are needed during the warranty period the purchaser will be required to provide a sales receipt/sales invoice or other acceptable proof of purchase to the seller of this equipment. The seller will then contact Vanco regarding warranty repair or replacement.

TECHNICAL SUPPORT

In case of problems, please contact Vanco Technical Support by dialing 1-800-626-6445. You can also email technical support issues to techsupport@vanco1.com.

When calling, please have the Model Number, Serial Number (affixed to the bottom of the unit) and Invoice available for reference during the call.

Please read this Instruction Manual prior to calling or installing this unit, since it will familiarize you with the capabilities of this product and its proper installation.

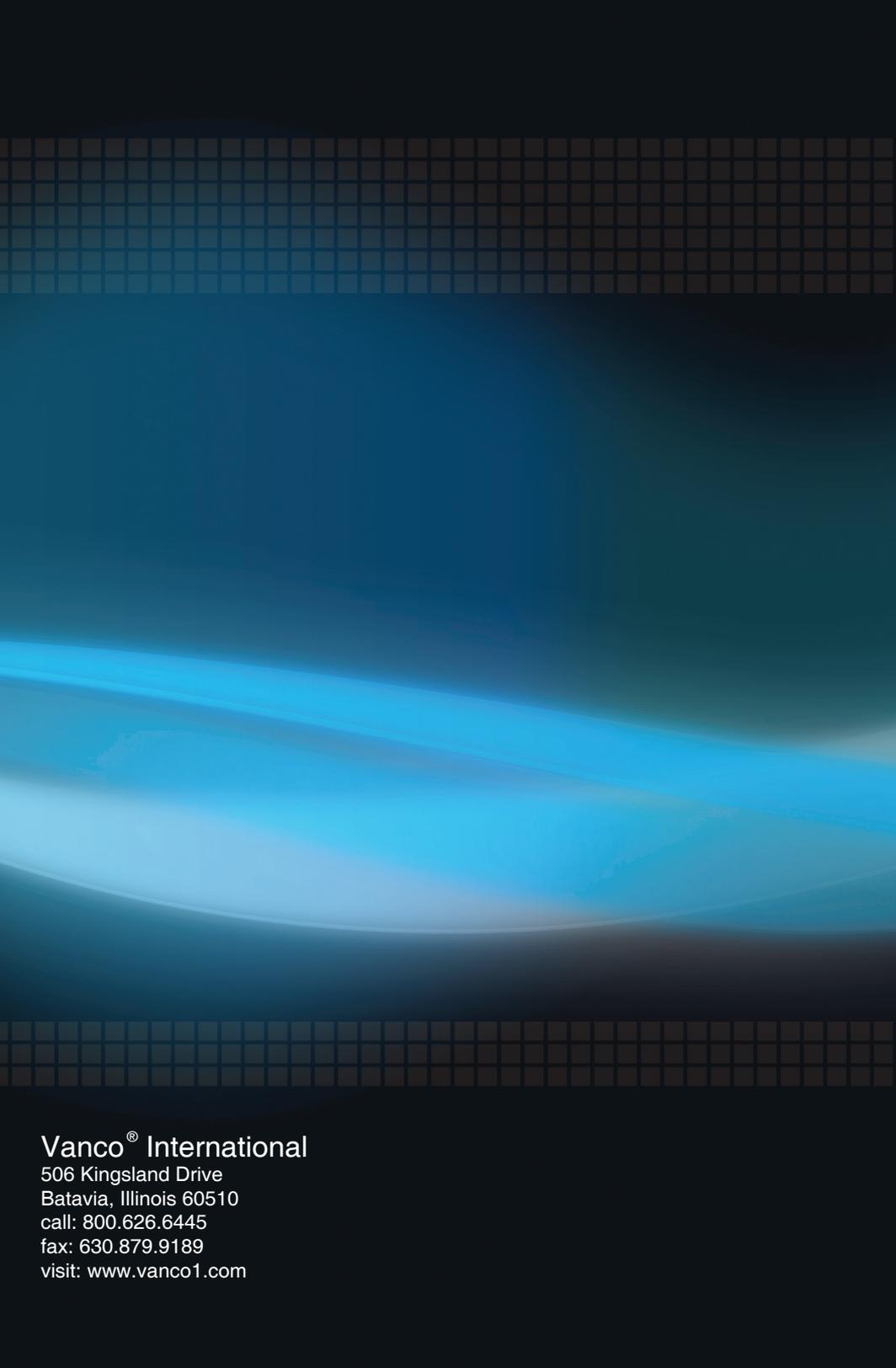
All active electronic products are 100% inspected and tested to insure highest product quality and trouble-free installation and operation. The testing process utilizes the types of high-definition sources and displays typically installed for entertainment and home theater applications.

For additional information, such as helpful installation videos, etc. please visit www.vanco1.com

LIABILITY STATEMENT

Every effort has been made to ensure that this product is free of defects. The manufacturer of this product cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user and installer of the hardware to check that it is suitable for their requirements and that it is installed correctly. All rights are reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

Manufacturer reserves the right to revise any of its hardware and software following its policy to modify and/or improve its products where necessary or desirable. This statement does not affect the legal rights of the user in any way.



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